

CLAIMS

What is claimed is:

1. A lens door mechanism for an image capture device, comprising:
an image capture device housing including a lens opening therethrough;
5 a lens door actuator including a handle portion accessible through said housing;
a lens door located within said housing, said lens door including a lens door loop;
a lever in communication with said lens door actuator at a first end, a second end
of said lever including a lever finger, said lever finger being engaged with said loop;
a pivot pin located within said housing, said pivot pin permitting said lever to
10 pivot around a pivot point during actuation of said lens door actuator; and
wherein rotational motion of said handle portion pivots said lever about said pivot
point to move said lens door linearly.
2. The lens door mechanism of claim 1, additionally including an alignment channel
15 within said housing, said lens door additionally including an alignment pin engaged with
said alignment channel, wherein rotational movement of said lens door actuator results in
moving said lens door up and down along said alignment channel by said alignment pin.
3. The lens door mechanism of claim 1, additionally including a spring in
20 communication with said lever to spring-bias said lever.
4. The lens door mechanism of claim 3, wherein said spring is connected between
said lever and a pin fixed inside said housing.
- 25 5. The lens door mechanism of claim 3, wherein said spring is a spring arm fixed at
a first end to said lever and having a second free end, the lens door mechanism
additionally including a roller fixed inside said housing, wherein said second free end is
in contact with said roller.

6. The lens door mechanism of claim 5, wherein said second free end includes a wedge portion that moves over said roller to provide momentum sufficient to aid said lever in fully opening and closing said lens door.

5 7. The lens door mechanism of claim 6, wherein at least one of said lever finger and said loop includes a bend in the material which enables said lever finger to engage said loop.

8. The lens door mechanism of claim 7, wherein said lever finger additionally
10 includes a bend in the lever material to enable said lever finger to engage said loop.

9. The lens door mechanism of claim 8, wherein said loop additionally includes a bend in the lens door material to enable said lever finger to engage said loop.

15 10. The lens door mechanism of claim 3, wherein said lens door actuator includes a grip accessible through said housing and a pendular lever attached to said grip at a first end and pivotally fixed to the image capture device at a second end, and wherein said pivot pin attaches said lever to said pendular lever at the pivot point.

20 11. The lens door mechanism of claim 10, wherein said pendular lever further includes a slot in which said pivot pin slides when said lens door actuator is actuated using said grip.

12. The lens door mechanism of claim 11, wherein said slot includes conically sloped
25 sides and said pivot pin includes a conically shaped surface that interacts with said slot in a complementary fashion.

13. The lens door mechanism of claim 10, wherein said pendular lever further includes a detent mechanism, the free end of which is spring biased against said housing,
30 said housing further including a plurality of indentations, wherein rotation of said

pendular lever slides said free end between one of said plurality of indentations to bias said pendular lever into one of a lens door open position and a lens door closed position.

14. The lens door mechanism of claim 13, further including an electrical switch for switching the image capture device, using said lens door actuator, between an on mode when said pendular lever is in said lens door open position and an off mode when said pendular lever is in said lens door closed position.

15. The lens door mechanism of claim 3, wherein said lens door actuator further includes, a rotary gear located outside said housing, and a connector including a control pin that is engaged through said housing with said rotary gear, said lever additionally including a second finger located distal from said lever finger, wherein said second finger is engaged with said connector such that rotational motion of said rotary gear moves said control pin and said second finger linearly, and pivots said lever on the pivot point to move said lens door linearly.

16. The lens door mechanism of claim 15, wherein said connector additionally includes two slots, each slot containing therein a guide pin and a spring, wherein each guide pin is located coaxially within each spring, each guide pin additionally including a bearing surface in contact with said second finger when said second finger is engaged with said connector, between said two slots.

17. The lens door mechanism of claim 15, further including an electrical switch for switching the image capture device, using said lens door actuator, between an on mode when said lever is in a lens door open position and an off mode when said lever is in a lens door closed position.

18. A lens door mechanism for an image capture device, comprising:
a grip accessible to the user;

a pendular lever attached to said grip at a first end and pivotally fixed to the image capture device at a second end;

a lens door lever attached to said pendular lever at a pivot point, said lens door lever including a lever finger;

5 a lens door including a loop, said lever finger being engaged with said loop via a bend in one of said lever finger and said lens door;

wherein rotational motion of said grip pivots said lens door lever around said pivot point to move said lens door linearly.

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19. The lens door mechanism of claim 18, wherein said lever further includes a spring arm having a first end fixed to said lever and having a second free end, the lens door mechanism additionally including a roller fixed inside said housing, wherein said second free end is in contact with said roller.

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20. The lens door mechanism of claim 19, wherein said second free end includes a wedge portion that moves over said roller to provide momentum sufficient to achieve and maintain a discrete lens door open position and a discrete lens door closed position.

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21. The lens door mechanism of claim 20, further including an electrical switch for switching the image capture device, using said lens door actuator, between an on mode when said pendular lever is in said lens door open position and an off mode when said pendular lever is in said lens door closed position.

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22. A method of capturing a nested release switch in an image capture device housing, comprising:

(a) providing an image capture device housing including a cylindrical bearing shaft post extending from the upper surface thereof, said cylindrical bearing shaft including a release shaft opening and a key opening, therethrough;

(b) mounting a release button spring to said image capture device housing around said cylindrical bearing shaft post, said spring including a spring body and a plurality of leaf spring legs extending upward from said spring body;

5 (c) providing a release button including a shaft and a key portion extending from said shaft and a track located on the lower surface of the release button;

(d) inserting said shaft of said release button into said release shaft opening while aligning said key portion with said key opening, after step (b); and

(e) turning said release button after step (d) to connect the upper surface of said key portion with the inside surface of said housing and simultaneously trap the upper
10 surface of one of said plurality of spring legs in said track to prevent further movement of said release button in the rotational direction, and wherein the upper surfaces of said plurality of spring legs contact the lower surface of said release button to normally bias said release button away from said housing.

15 23. The method of claim 22, wherein said providing step additionally includes providing a switch device inside said housing in alignment with said release shaft opening such and said inserting step includes the step of aligning the end of said shaft with said switch device, such that depression of said release button by a user causes the end of said shaft to close said switch, and upon the release of said release button, said
20 plurality of spring legs return said release button to its normal position.

24. The method of claim 23, further including the step of:

(f) providing a rotary switch gear rotatably engaged with said cylindrical bearing shaft post prior to step (b).
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25. The method of claim 24, wherein said image capture device further includes an electrical switch for switching the image capture device between an on mode and an off mode by rotating said rotary switch gear between a first position and a second position.

30 26. The method of claim 25, further including the step of

(g) providing prior to step (d) a detent spring including a detent spring finger, said detent spring being mounted circumferentially around said cylindrical bearing shaft post proximate to an upper surface of said rotary switch gear, wherein said upper surface of said rotary switch gear includes a plurality of detent notches, said detent spring finger
5 sized to be received in each of said plurality of detent notches, wherein rotation of said rotary switch gear permits said detent spring finger to capture said rotary switch gear in a plurality of discrete positions by engaging each of said plurality of detent notches.

27. The method of claim 26, wherein step (f) additionally includes linking said rotary
10 switch gear to a lens door mechanism such that rotation of said rotary switch gear additionally moves a lens door of said image capture device between a lens door open position and a lens door closed position.